

# UNIVERSITY OF CALIFORNIA.

## AGRICULTURAL EXPERIMENT STATION.

BULLETIN NO. 9.

### Examination of Zinfandel Wines.

It is well known that few grape varieties yield, by themselves, the most desirable wines; and this is most especially true of red wines. Outside of California, probably all red wines in market are the results of blends of two or more varieties, which compensate more or less each other's deficiencies, so as to produce a harmonious whole agreeable to the palate. In the old countries, the desirable blends have long been settled by experience. In California, the art of blending has hardly begun to be practiced systematically and advisedly on the large scale, and the random practice of wine dealers has not, on the whole, been fruitful of results approved by the taste of connoisseurs, as is apparent from the fact that so little California wine is consumed under its own name.

Several intelligent wine producers have heretofore entered upon the investigation of the problem of blends, by using wines made of one variety only, so as to reduce more or less fixed rules. Excellent results have thus been achieved; but apart from the natural reticence of the parties concerned, the fact that different localities necessitate blends different in kind and proportions, materially limits the utility of the experience so gained.

Chemical analysis cannot replace the trained palate of the wine-taster; but it can aid him materially in pointing the way towards the attainment of the desired qualities, by determining the prominent chemical peculiarities of each grape variety, and of the wines made therefrom. It is to this end that the work of the viticultural laboratory has mainly been directed, and the annual reports heretofore published contain a mass of data, which, however, could not lead to definite general results on account of being too limited in regard to the localities, number of grape varieties and vintages embraced therein. In this, the third year of its work, discussion begins to be possible, and the tables given below present the main points of the analyses of 18 wines made from one of the most important grape varieties, the "Zinfandel," whose prolific bearing, adaptation to short pruning, and yield of a fairly satisfactory product in all parts of the State, have secured to it the lion's share of nearly all the vineyards planted in late years.

#### RED ZINFANDEL WINES.

CONTRIBUTOR	LOCALITY.	Vintage	Solid Contents by Specific Gravity	ALCOHOL.		Tannin	Acid, calculated as Tartaric
				By Weight.	By Volume		
			1.	2.	3.	4.	5.
I. DeTurk	Santa Rosa	1880	2.383	10.26	12.70	....	.650
I. DeTurk	Santa Rosa	1881	3.007	10.67	13.20	....	.675
*Chas Krug	St. Helena	1880	2.000	9.20	11.46	....	.390
H. W. Crabb	Oakville	1882	2.310	9.32	12.36	....	.570
G. Husmann	Talcoo, Napa	1881	2.710	10.67	13.20	....	.478
G. Husmann	Talcoo Vineyard	1882	2.110	8.62	10.72	....	.690
*George West	Stockton	1881	2.575	11.57	14.20	.063	.437
J. Gallegos	Mission S. J.	1881	3.190	11.65	14.30	.041	.730
J. Gallegos	Mission S. J.	1882	2.940	10.81	13.27	.079	.590
*F. T. Eisen	Fresno	1883	2.690	11.20	13.70	.050	.435
R. Barton	Fresno	1883	3.465	9.92	12.36	.129	.433
D. Duquesne	Fresno	....	4.115	12.33	15.20	.102	.558
Sherman	El Cajon	1883	2.715	10.07	12.50	.154	.615

\* From grapes sent to the laboratory by the producers. The rest are samples sent ready made, but with assurance of their authenticity.

The figures of the above table show some remarkable relations amongst themselves as well as in comparison with the analyses of other wines, both California and foreign. As regards, first, the

#### "Solid Contents,"

column 1, the figures all show a good, in some cases a heavy "body,"\* all but one ranging above 2 per cent, three above 3, and one, from Fresno, even above 4 per cent. This places the average above that of clarets, and approaching that of Burgundies. Napa valley shows the lowest figures (2.0 to 2.3 per cent), Fresno, in two wines, the highest (3.46 and 4.12). The two next highest percentages come from Mission San Jose (2.94 and 3.19), and with them an even 3.0 from Santa Rosa, vintage 1881, while from the same locality we have in 1880 only 2.38 per cent. Vintage 1881, again, shows a high body in the cases of the Talcoo vineyard and of Mission San Jose. Curiously enough, the Cajon valley of San Diego, 1883, stands even with Eisen's vineyard, Fresno, of the same year, and also with Talcoo vineyard, Napa, 1881. Taking the averages of the different vintages represented, there appears clearly enough an increase of "body" to southward; yet Santa Rosa and Talcoo rise considerably above the Napa valley, and Mission San Jose above Stockton.

\* NOTE.—"Light-bodied" wines range from 1.2 to 1.5 per cent of solid contents.



### Alcoholic Strength.

In this respect, also, the maximum (15.20) occurs at Fresno, the minimum (10.67) in the Talco vineyard, Napa, in 1882. St. Helena and Oakville confirm this indication for Napa, although the valley wines range higher than that from the hills. The average for the four Napa wines is 11.93; that of the two Santa Rosa vineyards, 12.95; of the two from Mission San Jose, 13.79; three from Fresno, 13.75. El Cajon, far to southward, again ranges with Napa and Sonoma (Santa Rosa), and Stockton with Fresno. While it is true that the alcoholic strength is liable to vary very greatly according to the will and practice of the producer, yet the general tendency has been to produce the most alcoholic wines, because thus far they are most sought by wine merchants. Hence, after all, these indications must be accounted as approximately correct in representing well matured grapes.

The general result is that in alcoholic strength the Zinfandel wines range not inconsiderably above the average of French clarets, again approaching more nearly to the Burgundies.

### Tannin.

This important feature has not, unfortunately, been determined for all the wines analyzed in former years, but so far as the determinations go, the results are sufficiently definite and striking. In estimating their meaning it should be kept in mind that the average of French clarets ranges from about 18 to 20 *pro mille* (0.20 per cent.) Of all the wines here tabulated, only one—that from the Cajon valley, San Diego county—nearly approaches that amount, with 15.4 *pro mille*; next come two wines from Fresno, with 12.9 and 10.2 *pro mille*. Next highest is the vintage 1882 of Mission San Jose, with 7.9 *pro mille*, and the Talco vineyard, Napa, with 6.7. Alongside of the latter comes the striking fact of two wines of different years, from St. Helena and Oakville, in the Napa valley, which have so little tannin that the presence of the substance can be recognized, but not readily quantitatively determined. That great annual and local variations occur in this respect, also, is apparent from the comparison of Eisen's wine with that of Barton, both of Fresno, and of the two wines from Mission San Jose, one of which shows only half the amount of tannin contained in the other. Yet the general conclusion that tannin increases to the southward, and that it is deficient in the Zinfandels of Napa valley, can hardly be avoided.

This alone conveys most important hints in regard to the kinds of grapes needed for blending in the several localities. The Cajon and Fresno need not look for much more tannin; Napa must regard wines rich in tannin as the greatest need in blending its Zinfandels.

### Acid.

As regards the acid, also, the table furnishes much food for reflection. The valleys—St. Helena, Stockton and Fresno—show low acid; the slopes and rolling lands, a higher amount. In this connection it should be especially noted, that a proper proportion of tannin is essential in overcoming the somewhat sharp acidity of

the Zinfandels, which tend, in the hill lands, to rise above the standard average of six *pro mille*.

For comparison with the above series, it is interesting to note the composition of "second crop" wines, that is, made of grapes only just ripe, but not "full-ripe." The subjoined table gives the composition of two such wines:

SECOND CROP ZINFANDEL WINES.

CONTRIBUTOR	LOCALITY.	Vintage.....	Solid Contents by Spindle....	ALCOHOL.		Tannin .....	Acid calculated as Tartaric....
				By Weight.	By Volume		
Natoma Co. ...	Folsom .....	1883	2.060	8.48	10.60	.035	.810
J. Gallegos ...	Mission S. J. ...	1883	2.440	8.13	10.20	.025	.700

Comparing these wines with the general "run" of the main-crop Zinfandels in the first table, the differences are sufficiently apparent, especially where, as in the sample from Mission San Jose, a direct comparison can be made. As it may fairly be presumed that the Folsom wine would, on the whole, resemble the wines from Stockton and Talco vineyard, the outcome might be thus stated: Light body, light alcoholic strength, little tannin, much acid—a material fit, in general, for blending only, as it does not seem to develop much bouquet.

It thus appears that, as our best wine experts have long contended, no one locality thus far represented will yield a true claret from Zinfandels alone. Of all, the Cajon valley wine comes nearest to such a composition; but until that product shall have acquired some age, its merits cannot be definitely determined. The great bulk of all Zinfandels in the State will need to be blended, and the blends must vary considerably with the locality. In fact, it is plain that the Zinfandel is not a true claret grape; but there can be no doubt that it will lend itself to the preparation of exceedingly acceptable red wines, under whatever name. Perhaps its adaptation to white wines deserves more serious attention than has heretofore been bestowed upon it. The subjoined table shows the differences between red and white wines prepared from the same lots of grapes in the viticultural laboratory.

COMPARISON BETWEEN RED AND WHITE ZINFANDEL WINES.

CONTRIBUTOR	LOCALITY.	Vintage.....	Solid Contents by Spindle....	ALCOHOL.		Tannin .....	Acid calculated as Tartaric....
				By Weight.	By Volume		
Natoma Co. } 2d crop. W }	Folsom .....	1883	2.060	8.48	10.60	.035	.810
		1883	1.880	8.98	11.25	....	.548
Geo. West ... } W }	Stockton ...	1881	2.575	11.57	14.20	.063	.437
		1881	2.060	11.41	14.10	....	.420
Chas. Krug ... } W }	St. Helena...	1880	2.000	9.20	11.46	....	.390
		1880	1.800	9.34	11.54	....	.600

It will be noted that there is no material difference in the alcohol percentages of the red and white wines; but the latter have less body, of course less tannin, and in general less acid than the red. To the latter rule there is a conspicuous and unexplained exception in the case of Mr. Krug's wine.—The white Zinfandel wines often develop a very agreeable bouquet, and in any case form an excellent material for blending with lighter wines.

It is extremely desirable that the data regarding this important grape should be greatly multiplied, and all those having in their possession authentic, unmixed samples of wines made from this, or other grapes cultivated in California, would help the progress of rational wine-making in the State by transmitting to the University fully labeled samples of not less than two bottles of the same, for examination.

Berkeley, April 2, 1884. E. W. HILGARD.